Lab 2 PSM, Trigger, Privileges
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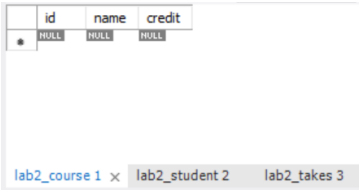
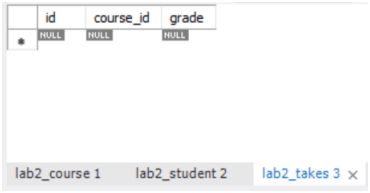
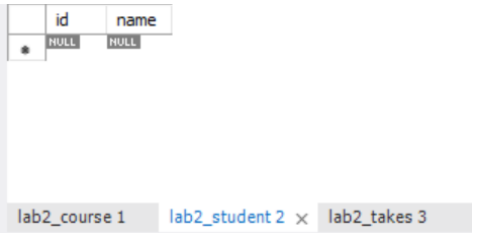


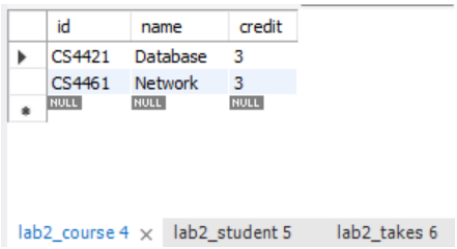




Part 1: PSM

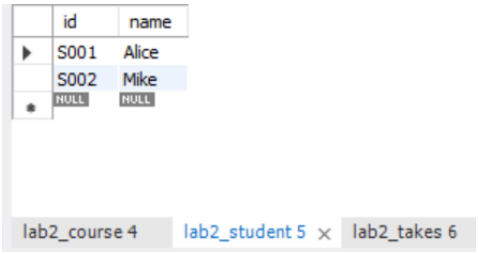
1.1 Create three tables

```
CREATE TABLE lab2_course (
    id CHAR(6),
    name CHAR(30),
    credit INT,
    PRIMARY KEY (id)
);

CREATE TABLE lab2_student (
    id CHAR(10),
    name CHAR(10),
    PRIMARY KEY (id)
);

CREATE TABLE lab2_takes (
    id CHAR(10),
    course_id CHAR(6),
    grade CHAR,
    PRIMARY KEY (id),
    FOREIGN KEY (id) REFERENCES lab2_student(id),
    FOREIGN KEY (course_id) REFERENCES lab2_course(id)
);

SELECT * FROM lab2_course;
SELECT * FROM lab2_student;
SELECT * FROM lab2_takes;
```



1.2. Insert data for two students and two courses.

```
INSERT INTO lab2_course (id, name, credit) VALUES
('CS4421', 'Database', 3),
('CS4461', 'Network', 3);
INSERT INTO lab2_student (id, name) VALUES
('S001', 'Alice'),
('S002', 'Mike');

SELECT * FROM lab2_course;
SELECT * FROM lab2_student;
```



2.1

```
delimiter //
CREATE PROCEDURE enroll(student_id CHAR(10), course_id CHAR(6))
BEGIN
  INSERT INTO lab2_takes VALUES (student_id, course_id, NULL);
END //
delimiter ;
```

4	13:18:27	CREATE PROCEDURE enroll(student_id CHAR(10), course_id CHAR(6...	0 row(s) affected	0.000 sec

2.2

```
CALL enroll('S001', 'CS4421');
SELECT * FROM lab2_takes;
```

id	course_id	grade
S001	CS4421	NULL
NULL	NULL	NULL

lab2_takes 7 × lab2_course 8 lab2_student 9

2.3

```
GRANT SELECT ON afenjiro.lab2_takes TO 'kjhoop'@'%';
GRANT EXECUTE ON PROCEDURE afenjiro.enroll TO 'kjhoop'@'%';

SELECT * FROM afenjiro.lab2_takes;
CALL afenjiro.enroll('S002', 'CS4461');
SELECT * FROM afenjiro.lab2_takes;
```

3.1

```
delimiter //

CREATE FUNCTION enrolled(course_id CHAR(6))
RETURNS INT
begin
  DECLARE total int;
  SELECT count(*) INTO total FROM lab2_takes WHERE course_id = course_id;
  return total;
end //
delimiter ;
```

1	21:07:00	CREATE FUNCTION enrolled(course_id CHAR(6)) RETURNS INT begin ...	0 row(s) affected	0.016 sec

3.2

```
SELECT enrolled('cs4421');
SELECT enrolled('cs4461');
```

enrolled('cs4421')
1

Result 1 × Result 2

enrolled('cs4461')
1

Result 1 Result 2 ×

Part 2: Trigger

1.1

```
ALTER TABLE lab2_student ADD total_credits INT DEFAULT 0;
```

```
4  21:26:29  ALTER TABLE lab2_student ADD total_credits INT DEFAULT 0  0 row(s) affected Records: 0  Duplicates: 0  Warnings: 0  0.016 sec
```

1.2

```
delimiter //

CREATE TRIGGER update_credits
AFTER UPDATE ON lab2_takes
FOR EACH ROW
BEGIN
  IF OLD.id = NEW.id
     AND OLD.course_id = NEW.course_id
     AND (OLD.grade IS NULL OR OLD.grade = 'F')
     AND NEW.grade IS NOT NULL
     AND NEW.grade != 'F' THEN
    UPDATE lab2_student
    SET total_credits = total_credits + (SELECT credit FROM lab2_course WHERE id =
OLD.course_id)
    WHERE id = NEW.id;
  END IF;
END //
DELIMITER ;
```

```
5  21:32:31  CREATE TRIGGER update_credits AFTER UPDATE ON lab2_takes FO...  0 row(s) affected  0.015 sec
```

1.3

```
SELECT * FROM lab2_student WHERE id = 'S001';

SELECT * FROM lab2_takes WHERE id = 'S001';

UPDATE lab2_takes
SET grade = 'A'
WHERE id = 'S001' AND course_id = 'CS4421';

SELECT * FROM lab2_takes WHERE id = 'S001';
SELECT * FROM lab2_student WHERE id = 'S001';
```

id	name	total_credits
S001	Alice	0

lab2_student 3 | lab2_takes 4 | lab2_takes 5 | lab2_student 6

id	name	total_credits
S001	Alice	3

lab2_student 3 | lab2_takes 4 | lab2_takes 5 | lab2_student 6

id	course_id	grade
S001	CS4421	NULL

lab2_student 3 | lab2_takes 4 | lab2_takes 5 | lab2_student 6

id	course_id	grade
S001	CS4421	A

lab2_student 3 | lab2_takes 4 | lab2_takes 5 | lab2_student 6